# RECEPTION

**Sunday, December 4**

**5:00 - 7:00 pm** **Opening Reception** Bldg 943A, Exploration Center, NASA Ames Research Center

**5:00 - 7:00** **Registration + pick up materials** at reception

## SESSIONS & PAPER TITLES

**Monday, December 5**

**8:00 - 8:30 am** **Registration + pick up materials** Building 152, Rooms 105-106

Unless specified, all sessions, breaks and poster sessions will be in Bldg. 152

**8:30 - 8:45** **Welcome Remarks**

*Pete Worden, Center Dir., NASA ARC; Roger Hunter, Kepler Mission Project Mgr., NASA ARC; William Borucki, PI Kepler Mission, NASA ARC; Matt Holman, Kepler Science Conf. Chair, Harvard-Smithsonian Center for Astrophysics*

### SESSION A - KEPLER MISSION AND EXOPLANET STATISTICS

*Alan Boss (chair) Carnegie Institution*

**8:45 - 9:15** **101 · The Kepler Mission and Exoplanet Statistics**
*Greg Laughlin (invited) University of California, Santa Cruz*

**9:15 - 9:45** **102 · CoRoT Exoplanet Search**
*Claire Moutou (invited) Laboratory of Astrophysics, Marseille*

**9:45 - 10:15** **103 · Kepler Mission and Exoplanet Statistics**
*William Borucki (invited) NASA Ames Research Center*

**10:15 - 10:45** **104 · Kepler's Exoplanet Survey: Honing in on eta-Earth**
*Natalie Batalha (invited) San Jose State University*

**10:45 - 11:15** **BREAK**

**11:15 - 11:30** **105 · Overview of the Kepler Science Operations Center Pipeline**
*Jon Jenkins, SETI Institute/NASA Ames Research Center*

**11:30 - 11:45** **106 · Detection of Threshold Crossing Events in the First Three Quarters of Kepler Data**
*Peter Tenenbaum, SETI Institute/NASA Ames Research Center*

**11:45 - 12:00** **107 · Uniform Modeling of the Kepler Objects of Interest Catalog**
*Jason Rowe, SETI Institute/NASA Ames Research Center*

**12:00 - 12:15** **108 · Kepler Completeness Study**
*Jessie Christiansen, SETI Institute/NASA Ames Research Center*

**12:15 - 12:30** **109 · Noise Sources Impacting Kepler's Photometry and Mission Goals**
*Douglas Caldwell, SETI Institute/NASA Ames Research Center*

**12:30 - 12:45** **110 · Using Spitzer to Estimate the Kepler False Positive Rate and to Validate Kepler Candidates**
*Jean-Michel Desert, Harvard-Smithsonian Center for Astrophysics*

## Monday sessions continued

**12:45 - 2:15** **LUNCH ON SITE, Building 3**
Demos of Kepler User Data

## SESSION B - EARTH ANALOG AND SUB-NEPTUNE-SIZE PLANETS

***Sara Seager (chair)*** *Massachusetts Institute of Technology*

**2:15 - 2:45** **111 · Patterns of Low-mass Planet Occurrence from Kepler and Doppler Planet Searches**
*Andrew Howard (invited) University of California, Berkeley*

**2:45 - 3:15** **112 · Occurrence, Mass Distribution and Orbital Properties of Super-Earths and Neptune-Mass Planets from the HARPS Survey**
*Christophe Lovis (invited) University of Geneva*

**3:15 - 3:30** **113 · Formation and Structure of Neptune-size Exoplanets**
*Peter Bodenheimer, UCO/Lick Observatory, Univ. of California, Santa Cruz*

**3:30 - 3:45** **114 · RV Follow-Up of Small Planets from Kepler: Verification, Masses, and Densities**
*Geoff Marcy, University of California, Berkeley*

**3:45 - 4:00** **115 · RV Follow-Up of Small Planets from Kepler: Planet Bulk Composition and Interior Structure**
*Leslie Rogers, Massachusetts Institute of Technology*

**4:00 - 4:30** **BREAK**

**4:30 - 4:45** **116 · Limits from Kepler and the MEarch Project on the Occurrence Rate of Super-Earths and Neptunes Around M Dwarfs**
*Courtney Dressing, Harvard-Smithsonian Center for Astrophysics*

**4:45 - 5:00** **117 · Kepler Transit Frequency Statistics in the Presence of Statistical False Positives**
*Philip Nutzman, University of California, Santa Cruz*

**5:00 - 5:15** **118 · The Validation of Earth-size Planets**
*Francois Fressin, Harvard-Smithsonian Center for Astrophysics*

**5:15 - 5:30** **119 · Kepler-11: Super-Earths or Mini-Neptunes? Constraints from Mass Loss**
*Eric Lopez, University of California, Santa Cruz*

**5:30 - 5:45** **120 · The Chemistry of Planet Formation: Detailed Abundances of Stars with Low-Mass Planets Discovered by Kepler**
*Simon Schuler, NOAO*

**5:45 - 6:00** **121 · When is an Earth-analog Really an Earth-analog?**
*Jill Tarter, SETI Institute*

**6:00 - 8:00** **POSTER SESSION,** Room 117

## Tuesday, December 6

**8:00 - 8:30 am** **Registration + pick up materials** Building 152, Rooms 105-106

## SESSION A CONTINUED - KEPLER MISSION AND EXOPLANET STATISTICS

**8:30 - 8:45** **201 · Kepler Exoplanet Candidate Host Stars are Preferentially Metal Rich**
*Kevin Schlaufman, University of California, Santa Cruz*

**8:45 - 9:00** **202 · Follow-up Observations and Modelling of Kepler Circumbinary Planet Candidates**
*Jerome Orosz, San Diego State University*

**9:00 - 9:15** **203 · Validation of Habitable-Zone Super Earth Kepler Candidates with Warm Spitzer**
*Sarah Ballard, Harvard-Smithsonian Center for Astrophysics*

**9:15 - 9:30** **204 · Accurate Stellar Parameters of Low-Mass Kepler Planet Hosts**
*Philip Muirhead, California Institute of Technology*

**9:30 - 9:45** **205 · Measuring the Physical Properties of Kepler's M Dwarf Planet Hosts**
*John Johnson, Caltech*

**10:00 - 10:30** **BREAK**

**10:30 - 10:45** **206 · Assessing the Kepler Inventory with Planet Hunters**
*Megan Schwamb, Yale University*

**10:45 - 11:00** **207 · What will Gaia do for Kepler?**
*Alessandro Sozzetti, INAF-Osservatorio Astronomico di Torino*

**11:00 - 11:15** **208 · Transiting Exoplanet Survey Satellite (TESS)**
*George Ricker, Massachusetts Institute of Technology*

**11:15 - 11:30** **209 · SOFIA: Capabilities for Studying Exoplanets in the Kepler Era and Beyond**
*Edward Dunham, Lowell Observatory*

**11:30 - 11:45** **210 · Astrophysics with Kepler During an Extended Mission**
*Martin Still, NASA Ames Research Ctr/ Bay Area Environmental Research Inst.*

**11:45 - 12:00** **TBD**

**12:00 - 2:00** **LUNCH ON SITE,** Building 3, Support for Community Involvement in Kepler for Follow-up Observing and the Extended Mission, *Chair: Steve Howell*

## Tuesday sessions continued
## SESSION C - MULTIPLE PLANET SYSTEMS

*Jack Lissauer (chair) NASA Ames Research Center*

**2:00 - 2:15** **211 · Statistical Arguments that Most Kepler Multi-Planet Candidates are Real Planets**
*Jack Lissauer, NASA Ames Research Center*

**2:15 - 2:45** **212 · Detailed Dynamical Portraits of Other Planetary Systems**
*Daniel Fabrycky (invited) University of California, Santa Cruz*

**2:45 - 3:00** **213 · The Kepler-18 Three Planet System**
*William Cochran, McDonald Observatory, The University of Texas at Austin*

**3:00 - 3:15** **214 · The Multiple Planet System Kepler-20**
*Nick Gautier, Jet Propulsion Laboratory*

**3:15 - 3:30** **215 · In Situ Planet Formation Models of the Kepler-11 Six Planet System**
*Elisa Quintana, SETI Institute/NASA Ames Research Center*

**3:30 - 4:00** **BREAK**

**4:00 - 4:15** **216 · Detection of Quasi-periodic Transiting Planets with Kepler**
*Eric Agol, University of Washington*

**4:15 - 4:30** **217 · Eccentricities & Inclinations in Kepler's Planetary Systems**
*Eric Ford, University of Florida*

**4:30 - 4:45** **218 · Constraining Orbital Eccentricity through Transit Photometry Alone: Multibody Asterodensity Profiling (MAP)**
*Varun Manthri, University College London*

**4:45 - 5:00** **219 · Confirmation and Characterization of Multitransiting Exoplanet Systems with Anti-Correlated Transit Timing Variations**
*Jason Steffen, Fermilab Center for Particle Astrophysics*

**5:00 - 5:15** **220 · The Secular Character of Multi-planet Systems: Kepler-10, 11 and 16**
*Christa Van Laerhoven, The University of Arizona*

**5:15 - 5:30** **221 · Analysis of 224 Kepler Exoplanets in 93 Multiple Systems**
*David Ciardi, NASA Exoplanet Science Institute/Caltech*

**5:30** **ADJOURN**

**7:00** **PUBLIC TALKS,** Building 152, Room 171
**7:00 - 7:30** **Natalie Batalha**
**7:45 - 8:15** **Donald Kurtz**

## Wednesday, December 7

**8:00 - 8:30 am** **Registration + pick up materials** Building 152, Rooms 105-106

## SESSION D · EXOPLANET THEORY

***Dimitar Sasselov (chair)*** *Harvard-Smithsonian Center for Astrophysics*

**8:30 - 9:00** **301 · Using the Composition of Super-Earths to Track Formation Processes**
*Diana Valencia (invited) Massachusetts Institute of Technology*

**9:00 - 9:15** **302 · Accumulation of Hydrogen-Rich Atmospheres of Nebular Origin on Short-Period Super-Earths: Implications for Kepler-11 Planets**
*Masahiro Ikoma, Tokyo Institute of Technology*

**9:15 - 9:30** **303 · Core Erosion in Gas Giant Exoplanets Predicted from Ab Initio Simulations**
*Burkhard Militzer, University of California, Berkeley*

**9:30 - 9:45** **304 · Theoretical Issues for Rocky Planet Interiors Near 1.0 Earth-mass and M-R Relations**
*Dimitar Sasselov, Harvard-Smithsonian Center for Astrophysics*

**9:45 - 10:00** **305 · Planet Formation and the Diversity of Planetary Systems**
*Benjamin Bromley, University of Utah*

**10:00 - 10:30** **BREAK**

**10:30 - 10:45** **306 · The Final Stage of Terrestrial Planet Formation**
*Eiichiro Kokubo, National Astronomical Observatory of Japan*

**10:45 - 11:00** **307 · Snagging an Earth-Class Exoplanetary Moon**
*Darren Williams, Penn State Erie, The Behrend College*

**11:00 - 11:15** **308 · Are Hot Neptunes Partially Evaporated Hot Jupiters?**
*Gwenael Boue, CAUP*

**11:15 - 11:30** **309 · Transit Constraints for a General Planet Formation Theory Provided by CoRoT and Kepler**
*Gunther Wuchterl, Thüringer Landessternwarte, CoRoT (DLR)*

**11:30 - 11:45** **310 · Formation and Diversity of Planetary Systems around M dwarfs: Toward the Next-Generation Observations**
*Yasunori Hori, National Astronomical Observatory of Japan*

**11:45 - 2:00** **LUNCH ON SITE,** Building 3
Discussion, Kepler Data Analysis Workshop

## SESSION E · GIANT PLANETS AND PLANET ATMOSPHERES

***Jonathan Fortney (chair)*** *University of California, Santa Cruz*

**2:00 - 2:30** **311 · Kepler Giant Planet Discoveries**
*Sara Seager (invited) Massachusetts Institute of Technology*

## Wednesday sessions continued

**2:30 - 2:45** **312 · The Heavy-Element Masses of Extrasolar Giant Planets, Revealed**
*Jonathan Fortney, University of California, Santa Cruz*

**2:45 - 3:00** **313 · Kepler's Dark and Reflective Worlds**
*Brice-Olivier Demory, Massachusetts Institute of Technology*

**3:00 - 3:15** **314 · Albedo Spectra of Extrasolar Giant Planets**
*Mark Marley, NASA Ames Research Center*

**3:15 - 3:45** **BREAK**

**3:45 - 4:00** **315 · Search for Secondary Eclipses of Hot Jupiters in Kepler Q2 Light Curves**
*Mercedes Lopez-Morales, Inst. de Ciencies de L'Espai (CSIC-IEEC), Spain*

**4:00 - 4:15** **316 · Asymmetric Transit Curves as Indication of Orbital Obliquity: Stars and Companion in KOI-13**
*Gyula Szabo, Konkoly Observatory, Hungarian Academy of Sciences*

**4:15 - 4:30** **317 · Interpreting Geometric Albedos, Phase Curves, and Polarization of Reflected Light from Exoplanets**
*Nikku Madhusudhan, Princeton University*

**4:30 - 4:45** **318 · Constraints on the True Obliquity of the Orbit of HAT-P-7b**
*Joshua Carter, Harvard-Smithsonian Center for Astrophysics*

**4:45 - 5:00** **319 · Measuring the Spin-Orbit Misalignment of KOI-13.01 from Kepler Transit Photometry Using Gravity Darkening**
*Jason Barnes, University of Idaho*

**5:00 - 5:15** **320 · Clues of the Origins of Hot Jupiters**
*Amaury Triaud, Observatoire Astronomique de l'Université de Genève*

**5:15** **ADJOURN**

## Thursday, December 8

**8:00 - 8:30 am** **Registration + pick up materials** Building 152, Rooms 105-106

## SESSION F · ECLIPSING AND INTERACTING BINARIES

***William Welsh (chair)*** *San Diego State University*

**8:30 - 9:00** **401 · Kepler Harvest of Eclipsing Binary Stars**
*Andrej Prsa (invited) Villanova University*

**9:00 - 9:15** **402 · KOI-54: A Remarkable Periastron-Pumped Pulsating Binary Star**
*William Welsh, San Diego State University*

**9:15 - 9:30** **403 · Heartbeat Stars: A Class of Tidally Excited Eccentric Binaries**
*Susan Thompson, SETI Institute/NASA Ames Research Center*

**9:30 - 9:45** **404 · Tests of Age, Mass, and Radius from Binary Stars in Open Clusters**
*Eric Sandquist, San Diego State University*

**9:45 - 10:00** **405 · An Eclipsing White Dwarf-M Dwarf System Observed with Kepler**
*Roi Alonso, Observatoire Astronomique de l'Univ. de Genève, Switzerland*

**10:00 - 10:30** **BREAK**

**10:30 - 10:45** **406 · Circumbinary Companions of Intermediate-Mass Eclipsing Binary Stars**
*Douglas Gies, Georgia State University*

**10:45 - 11:00** **407 · Photometric Detection of Non-transiting Short-period Binaries Through the Beaming, Ellipsoidal and Reflection Effects in the Kepler Light Curves**
*Tsevi Mazeh, Tel Aviv University*

**11:00 - 11:15** **408 · Dynamical Tides in Aeccentric Binaries and Tidally Excited Stellar Pulsations in Kepler KOI-54**
*Jim Fuller, Cornell University*

**11:15 - 11:30** **409 · Kepler Observations of Rapid Optical Variability in Active Galactic Nuclei**
*Rick Edelson, University of Maryland*

**11:30 - 1:30** **LUNCH OFF SITE**

## SESSION G · STELLAR ACTIVITY AND ROTATION

***Andrea Dupree (chair)*** *Smithsonian Astrophysical Observatory*

**1:30 - 2:00** **410 · Early Results from Kepler on Stellar Activity**
*Gibor Basri (invited) University of California, Berkeley*

**2:00 - 2:15** **411 · The Flaring Behavior of G Stars Observed by Kepler**
*David Soderblom, Space Telescope Science Institute*

## SESSION G CONTINUED · STELLAR ACTIVITY AND ROTATION

**2:15 - 2:45** **412 · Starspotting: Looking at Kepler Data for Insight into Stellar Magnetic Activity**
*Lucianne Walkowicz (invited) Princeton University*

**2:45 - 3:00** **413 · Spot Evolution and Differential Rotation on Sun-like Stars**
*Svetlana Berdyugina, KIS, Freiburg*

**3:00 - 3:30** **BREAK + POSTER SESSION,** Room 117

**3:30 - 3:45** **414 · New Methods to Model Activity-Induced Signals in Photometry and Radial Velocity**
*Suzanne Aigrain, University of Oxford*

**3:45 - 4:00** **415 · Starspots and Spin-orbit Alignment for Kepler Planetary Systems**
*Roberto Sanchis Ojeda, Massachusetts Institute of Technology*

**4:00 - 4:30** **416 · The Kepler Cluster Study and Stellar Rotation in Clusters**
*Soren Meibom (invited) Harvard-Smithsonian Center for Astrophysics*

**4:30 - 6:30** **POSTER SESSION,** Room 117

**6:30** **ADJOURN**

## Friday, December 9

**8:00 - 8:30 am** **Registration + pick up materials** Building 152, Rooms 105-106

### SESSION H · ASTEROSEISMOLOGY

*Jørgen Christensen-Dalsgaard (chair) University of Aarhus, Denmark*

**8:30 - 9:00** **501 · Asteroseismology: New Insights in Variable Stars in the Classical Instability Strip**
*Donald Kurtz (invited) University of Central Lancashire*

**9:00 - 9:30** **502 · The Physics of Stochastic Excitation**
*Peter Goldreich (invited) California Institute of Technology*

**9:30 - 9:45** **503 · Asteroseismology of the Solar Analogs 16 Cyg A & B from Kepler Observations**
*Travis Metcalfe, High Altitude Observatory, NCAR*

**9:45 - 10:00** **504 · Observational Constraints, Stellar Models, and Kepler Data for Theta Cyg, the Brightest Star Observable in the Kepler Field of View**
*Joyce Guzik, Los Alamos National Laboratory*

**10:00 - 10:15** **505 · Seismic Age Calibration and Heavy-element Abundance in Solar-type Stars**
*Guenter Houdek, Institute of Astronomy, University of Vienna*

**10:15 - 10:45** **BREAK**

### SESSION I · ENSEMBLE ASTEROSEISMOLOGY OF SOLAR-TYPE STARS

***Hans Kjeldsen (chair)*** *University of Aarhus, Denmark*

**10:45 - 11:15** **506 · Ensemble Asteroseismology of Solar-type Stars**
*Bill Chaplin (invited) University of Birmingham*

**11:15 - 11:45** **507 · Asteroseismic Modelling of Kepler Stars**
*Sarbani Basu (invited) Yale University*

**11:45 - 12:00** **508 · Long-baseline Interferometry Follow-up of Kepler Stars Using the CHARA Array**
*Daniel Huber, NASA Ames Research Center/ University of Sydney*

**12:00 - 12:15** **509 · Asteroseismic Analysis of Two Sun-like Kepler Subgiants: KIC11395018 and KIC10920273**
*Gulnur Dogan, NCAR/High Altitude Observatory*

**12:15 - 2:15** **LUNCH OFF SITE**

## Friday sessions continued

### SESSION J · RED GIANT OSCILLATIONS

***Thomas Kallinger (chair)*** *Ku Leuven*

**2:15 - 2:45** **510 · Asteroseismology of Red Giants**
*Tim Bedding (invited) School of Physics, University of Sydney*

**2:45 - 3:00** **511 · Red Giants Unveiled**
*Benoit Mosser, LESIA, Observatoire de Paris*

**3:00 - 3:15** **512 · The Intersection of Asteroseismology and Abundances**
*Courtney Epstein, Ohio State University*

**3:15 - 3:30** **513 · Probing the Inner Rotation Profile of the Subgiant KIC7341231**
*Sebastien Deheuvels, Yale University*

### FINAL TALK · ASTROBIOLOGY

**3:30 - 4:00** **514 · Astrobiology**
*Carl Pilcher (invited) NASA Ames Research Center*

**4:00** **ADJOURN**